PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of

Pierre RIPOCHE, et al.

Appln. No.: 09/519,847

Confirmation No.: 8169

Filed: March 06, 2000

Docket No: Q58134

Group Art Unit: 1731

Examiner: John M. HOFFMAN

For: METHOD OF FABRICATING AN OPTICAL FIBER PREFORM INCLUDING OUTSIDE DEPOSITION OF SILICA, POSSIBLY DOPED SILICA

APPELLANTS' BRIEF ON APPEAL UNDER 37 C.F.R. § 1.192

MAIL STOP APPEAL BRIEF - PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In accordance with the provisions of 37 C.F.R. § 1.192, Appellants submit the following:

I. REAL PARTY IN INTEREST

Based on information supplied by Appellants, and to the best of the Appellants' legal representatives' knowledge, the real party in interest is ALCATEL, by virtue of a Assignment recorded on March 6, 2000 at Reel 010662, Frame 0264.

II. RELATED APPEALS AND INTERFERENCES

Appellants, Appellants' legal representatives, and the assignee in this application are not aware of any other appeals or interferences which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 1-4 are all the claims pending in the application. Claim 4 is withdrawn from consideration as being drawn to a non-elected invention. Claims 1-3 stand rejected.

Claims 1-3 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Fujikura (JP 4-160028) in view of Le Sergent (USP 5,194,714) and optionally in view of Yokota (USP 4,846,867) and Fleming (USP 4,872,895).

IV. STATUS OF AMENDMENTS

Appellants filed an Amendment under 37 C.F.R. § 1.111 on June 1, 2001, in response to the Office Action (paper no. 4) mailed February 1, 2001, wherein claim 1 was amended, and claim 4 was added as a new claim. Appellants filed an Amendment under 37 C.F.R. § 1.116 October 11, 2001, in response to the Final Office Action (paper no. 7) mailed June 13, 2001, in which claim 1 was further amended. The § 116 Amendment was forced into entry by the Request for Continued Examination filed on October 26, 2001. Still further, Appellants filed an Amendment under 37 C.F.R. § 1.111 on January 24, 2002, in response to the Office Action (paper no. 13) mailed November 7, 2001, in which claims 1 and 3 were amended. Appellants filed an Amendment under 37 C.F.R. § 1.116 on May 7, 2002, in response to the Final Office Action dated February 22, 2002, in which claim 5 was added as a new claim. The § 116 Amendment was forced into entry by the Request for Continued Examination filed on June 18, 2002. On October 24, 2002, Appellants filed an Amendment under 37 C.F.R. § 1.111 in response to the Office Action dated July 2, 2002 (paper no. 20), in which claim 5 was canceled. Finally, in response to the Final Office Action (paper no. 23) dated November 7, 2002, Appellants filed an Amendment under 37 C.F.R. § 1.116 on April 7, 2003, in which claims 1-3 were amended.

In the Advisory Action mailed April 16, 2003, the Examiner indicated that upon filing of a Notice of Appeal, the Amendment under 37 C.F.R. § 1.116 filed on April 7, 2003 would be entered.

Appellants filed a Notice of Appeal on April 23, 2003, to appeal from the Final rejection (paper no. 23) of claims 1-3.

V. SUMMARY OF THE INVENTION

The present invention is directed to an improved method for fabricating an optical fiber preform. Such a method includes a step of outside deposition of silica possibly doped with at least one dopant (Specification, page 2, lines 5-7).

An injector means and a heating means are provided (Specification, page 2, lines 8-10). At least one substance is injected by the injector means in a heated area created by the heating means. In the present invention, the relative positions of the injector means and heating means are adjusted with respect to each other during at least one pass (Specification, page 4, line 13-15). Since the relative positions of the heating means and injector means are optimized with respect to each other, the substance injected by the injector means is more likely to be deposited in the heated area created by the heating means during that pass.

In the conventional methods, the injector means and the heating means are permanently fixed with respect to each other (Specification, page 3, lines 5-8). This creates a problem since some of the injected substance is not deposited on the heated area created by the heating means. Thus, the reactive gases or grains leaving the injector means and which do not reach the heated area created by the heating means are eliminated without an opportunity to react (Specification, page 3, lines 15-19). In the case of outside deposition methods, the outside deposit cannot be optimized (Specification, page 3, lines 30-35).

Figures 2 and 3 illustrate the above problem. Conventional methods involve fixing the position of the nozzle 5 (orifice 5a) with the torch 4 as they make each pass along the length of the preform. The hot area created by the torch is shown as area ABCD. However, the cone 14 of deposition gases and particles overlaps not only a part of the area ABCD, but also the cold area BCE. This reduces the yield of the deposit (Specification, page 8, lines 6-16).

With the present invention, this problem is eliminated by optimizing the relative positions of the torch (heating means) and nozzle (injector means). In Figures 4 and 5, the cone 14 overlaps the heated area ABCD without overlapping any cold areas (Specification, page 8, lines 24-32). Thus, the present invention provides an improvement over conventional methods, by adjusting the relative positions of the injector means and heating means with respect to each other during the deposition process.

VI. ISSUES

Whether claims 1 and 2 are rendered obvious by the combination of Fujikura (JP 4-160028), Le Sergent (USP 5,194,714), Yokota et al. (USP 4,846,867) and Fleming et al. (USP 4,872,895).

Whether claim 3 is rendered obvious by the combination of Fujikura (JP 4-160028), Le Sergent (USP 5,194,714), Yokota et al. (USP 4,846,867) and Fleming et al. (USP 4,872,895).

VII. GROUPING OF CLAIMS

Claims 1-4 are all the claims pending in the application. Claim 4 is withdrawn from consideration as being drawn to a non-elected invention. Claims 1-2 stand or fall together. In addition, claim 3 stands or falls alone.

VIII. ARGUMENTS

Claims 1 and 2 are not rendered obvious by the combination of Fujikura, Le Sergent, Yokota et al. and Fleming et al.

Claim 1 is patentable over the combination of cited references, because the combination of cited references fails to teach or suggest a method of fabricating an optical fiber preform wherein, during at least one pass along a longitudinal axis of the preform, the relative positions of the injector means and the heating means are adjusted with respect to each other, so that silica is deposited in the heated area regardless of the position of the heating means.

The Examiner asserts that Fujikura discloses all the features of the claimed invention according to claim 1, except for the plasma torch. However, Appellants respectfully submit that Fujikura is lacking in many other important features. Namely, Fujikura fails to teach or suggest the relative adjustability of the heating means and injector means during a pass along the longitudinal axis of the preform.

More specifically, Claim 1 is directed to a method of fabricating an optical fiber preform, including the step of outside deposition of silica in a heated area. The heated area is created by heating means during at least one pass of the heating means and an injector means, that is associated with that heating means, along a longitudinal axis of the preform. The relative positions of the injector means and the heating means are adjusted with respect to each other so that the silica is deposited in the heated area regardless of the position of the heating means. The heating means is a plasma torch. (See Claim 1.)

Thus, in the present invention, the heating means and the injector means move *with respect to each other*. In other words, the *relative positions* of the heating means and the injector means are

adjustable since they move separately from one another. This is distinguishable from the disclosure of Fujikura as follows.

Fujikura discloses a device for producing an optical fiber preform. Fujikura discloses a plurality of burners 9, 17 for depositing soot (see Abstract and Figure 1). Supposedly, each burner 9, 17 functions as both an injector and a heater. Although a plurality of these burners (i.e., heating/injector members) are provided, each heating/injecting member is an integral unit so that their relative positions cannot be adjusted with respect to each other along a longitudinal axis of the preform. Thus, while the heating means of one burner may be relatively moved with respect to the injector means of *another* burner, the heating means and injector means that are *associated* with each other (i.e., of a particular burner) are not moved with respect to each other.

At most, Fujikura discloses two guideplates 7a, 15a for the burners 9, 17, each guideplate moveable with respect to the other guideplate so that the relative positions of the guideplates can be adjusted. However, each heating means and its associated injector means is not adjustable with respect to each other; each heater and injector of a burner is fixed together. Moreover, the heating means of one burner is not associated with the injector means of another burner. In other words, there is no provision for the heating means of one of the guideplates to create a heating area so that silica injected from the other guideplate is injected to that heated area of the first guideplate. There is simply no teaching or suggestion that a heating means and injector means *that are associated with each other* are separately moveable with respect to each other along a longitudinal axis of the preform.

This is an important feature of the present invention because the distance between the heating means and the injector means allows for a more efficient method for fabricating an optical preform.

As discussed throughout the instant application, since the heating means and injector means are distanced from each other, a heated area created by the heating means can be more effectively utilized by the injector means.

The crux of the disagreement between Appellants' and Examiner's positions hinges on the interpretation of the relationship between an associated heating means and injector means.

Appellants submit that the heating means and injector means are "associated with each other", because the injector means injects the substance in a heated area that was created by the associated heating means during at least one pass of the heating means and the injector means.

The Examiner asserts that the heating area can be arbitrarily designated (paper no . 23). Further, the Examiner states that, "the heating area is not defined in a way that it precludes unheated sections."

In the Final Office Action, ("Response to Arguments", page 4-5), the Examiner states that the "area ABCD itself is an arbitrary area. One of ordinary skill in the art would be at a complete loss as to what this area is. Examiner assumes that this area is defined by some temperature. However, there is no indication as to what that temperature is. Since the claims do not limit the area to what the temperature is, examiner has no choice but to give a very broad interpretation to what the area is."

Appellants respectfully submit that the heated area is self-explanatory and no assumptions are necessary. When read in light of the specification, one of ordinary skill in the art would understand the meaning of this terminology as intended by Appellants. That is, the heated area is the area heated by the heating means and is clearly discussed in the specification and figures as the *area ABCD* that is created by the heating means. The area is illustrated in Figs. 4-5. The area is discussed on pages

8-9 of Specification. Thus, the heated area refers to that area ABCD heated by the heating means, i.e., the plasma torch, and it would not be consistent with the Specification to interpret this area as including any other area. It is clear from a reading of the specification and claims that Appellants are referring to the particular area ABCD that is heated by the torch rather than any other peripheral areas or areas which may be warmer than room temperature since the present invention is specifically directed to improving the relative positions of the torch and injecting means with respect to this heated area ABCD. A thorough review of the claims in light of the specification would lead one of ordinary skill in the art to understand this aspect of the invention.

In the Final Rejection, the Examiner further submits that Appellants have made "only an allegation that the means 9 and 17 are not associated with each other." The Examiner argues that "there is no rationale or evidence to support this." However, Appellants submit that the burners 9 and 17 are not associated with each other, consistent with the meaning of Claim 1, because the burner 9 does not heat the area for the burner 17 since these two burners are each paired on separate guide plates which separately deposit soot as explained in further detail below.

The Examiner relies on burner 9 as the heating means, and burner 17 as the injecting means (see Final Office action, page 4, first paragraph). However, these two burners are not associated with each other as in the present invention. That is, the alleged "injecting means 17" does not inject silica in the heated area created by the alleged "heating means 9". Instead, in Fujikura, the "injecting means 17" injects soot in the area heated by its associated heating means (burner) 17 on the guideplate 15a, while the "heating means 9" heats an area to be injected by its associated injector means (burner) 9 on the guideplate 7a.

In view of the foregoing, Fujikura fails to teach or suggest that a heating means and its associated injector means, wherein said injector means injects silica in the heated area created by the heating means, are adjusted with respect to each other. Rather, Fujikura suffers from the same deficiencies outlined in the background portion of the pending specification, i.e., the heated area is not maximized because the injecting means and heating means are *fixed* with respect to each other and cannot be adjusted to maximize efficiency of the heated area.

None of the other cited references makes up for this deficiency. In summary, none of the cited references, whether taken alone or in combination, teaches or suggests that the heating means and its associated injector means can be adjusted with respect to each other. Instead, all of the cited prior art discloses heating and injector means that are fixed in position with respect to each other. Le Sergent fails to teach or suggest that the heating means and injecting means that are associated with each other are movable with respect to each other. Yokota fails to teach or suggest movable heating or injecting means. Still further, Fleming also fails to teach or suggest that the heating means and injecting means that are associated with each other are movable with respect to each other. Thus, none of these references provides any motivation for modifying Fujikura.

Thus, even if one were to combine the cited references, one would not have been motivated to modify the heating means and its associated injector means of Fujikura to be adjustable with respect to each other along the longitudinal axis of the preform, so that the silica is deposited in the heating area created by that heating means.

In view of the foregoing, claim 1 is patentable.

Claims 2 is patentable for at least the same reasons as claim 1, by virtue of its dependency therefrom.

Claim 3 is not rendered obvious by the combination of Fujikura, Le Sergent, Yokota et al. and Fleming et al.

Claim 3 is not rendered obvious by the combination of cited references for at least the same reasons as claim 1. Namely, none of the cited references, whether taken alone or in combination, teaches or suggests that the heating means and its associated injector means should be adjustable with respect to each other during at least one pass along the longitudinal axis of the preform. Rather, the cited prior art merely discloses that the associated injector and heating means are fixed with respect to each other.

Claim 3 is additionally patentable due to its particular recitations directed to the relative planar positions of the heating means and injector means.

Specifically, none of the cited references, whether taken alone or in combination, teaches or suggests that the plasma torch and the injector means each reside in a respective plane, and that a fixed angle is defined by the intersection of each of these planes, so that the torch and injector means move relative to each other within their own respective planes in a direction parallel to the longitudinal axis of the preform.

In Fujikura, each of the injector/heating members (i.e., burners) are coupled together on a guideplate as discussed above with respect to claim 1. See Fig. 1. Thus, it is not possible for the injector means to be on a separate plane from the heating means, so that a fixed angle is defined by their intersecting planes. This feature of claim 3 further supports Appellants' position that Fujikura fails to disclose a heating means and an injector means that are movable with respect to each other as in the present invention.

Since none of the other cited references touches upon the idea of utilizing an injector means and a heating means that are adjustable with respect to each other, within their respective planes, in a

direction parallel to the longitudinal axis of the preform, one would not have been motivated to modify Fujikura to arrive at the present invention according to claim 3.

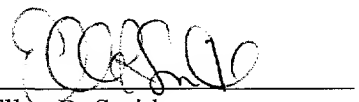
Thus, Appellants respectfully submit that dependent claim 3 should be patentable for these reasons, in addition to those set forth above regarding claim 1.

IX. CONCLUSION

Appellants hereby petition for any extension of time which may be required to maintain the pendency of this case, and any required fee for such extension is to be charged to Deposit Account No. 19-4880. The present Brief on Appeal is being filed in triplicate. Unless a check is submitted herewith for the fee required under 37 C.F.R. §1.192(a) and 1.17(c), please charge said fee to Deposit Account No. 19-4880.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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WASHINGTON OFFICE

23373
PATENT TRADEMARK OFFICE

Date: June 23, 2003

Attorney Docket No.: Q58134

APPENDIX

CLAIMS 1-3 ON APPEAL:

1. A method of fabricating an optical fiber preform including a step of outside deposition of silica possibly doped with at least one dopant, comprising:

injecting at least one substance, with an injector means, in the form of silica or a precursor of silica, in a heated area created by heating means during at least one pass of said heating means and said injector means, wherein said injector means is associated with said heating means,

wherein said at least one pass is along a longitudinal axis of said preform, during which the relative positions of said injector means and said heating means are adjusted with respect to each other, so that said silica is deposited in said heated area regardless of the position of said heating means, and

wherein said heating means is a plasma torch.

2. The method claimed in claim 1, wherein said adjustment is carried out between each of said at least one pass and the next.

3. The method claimed in claim 1 wherein said plasma torch has a main axis in a plane, said injector means has a main axis in a plane, wherein a fixed angle is defined by the intersection of said plane of said plasma torch and said plane of said injector means, and said injector means and said plasma torch move relative to each other, within their respective planes, in a direction parallel to said longitudinal axis of said preform.

AF/1731

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SUBMISSION OF APPELLANT'S BRIEF ON APPEAL

MAIL STOP APPEAL BRIEF - PATENTS
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Sir:

Submitted herewith please find an original and two copies of Appellant's Brief on Appeal.

Please charge the statutory fee of $320.00 to Deposit Account No. 19-4880. The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account. A duplicate copy of this paper is attached.

Respectfully submitted,

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Date: June 23, 2003